#### **1** Supplemental data

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#### **3** Supplemental methods

4 EAE mice model. EAE was induced by complete Freund's adjuvant (CFA)-MOG35-55 peptide immunization (China Peptides Biotechnology) and scored daily. 5 6 Briefly, C57BL/6J mice were injected subcutaneously into the base of the tail and both flanks with a volume of 200 µl containing 200 µg MOG35-55 peptide emulsified 7 8 in complete Freund's adjuvant (Sigma-Aldrich). Mice were also injected 9 intraperitoneally with 500 ng of pertussis toxin (Sigma-Aldrich) on days 0 and 2 10 postimmunization. All reagents used for the in vivo experiments were free of 11 endotoxin. Mice were monitored daily for the development of disease, which was 12 scored according to the following scale: 0, no symptoms; 1, tail weakness; 2, tail 13 paralysis and hind limb weakness; 3, complete hind limb paralysis; 4, hind limb 14 paralysis with forelimb weakness and 5, moribund or death.

15 *Generation of bone marrow chimeric mice*. One week before irradiation, feed the 16 recipient mice with medicated water. Bone marrow cells were prepared from WT or 17 miR-210 KO donor mice and adoptively transferred into lethally irradiated (950 rad, 18 in two divided doses) miR-210 KO or WT recipient mice (8-week-old,  $1 \times 10^7$  per 19 mouse). After transplantation, the recipient mice were continue to give medicated 20 water for one week. After 8 weeks, the chimeric mice were subjected for psoriasis-11 like mouse model induction.

Adoptive transfer of na  $\ddot{v}e \ CD4^+ T \ cells$ . Spleens from donor WT and miR-210 KO mice were homogenized in complete RPMI 1640 medium (Gibco, USA) and passed through a 40  $\mu$ m cell strainer to yield a single cell suspension. Na  $\ddot{v}e \ CD4^+ T$ cells were isolated by negative selection using the mouse na  $\ddot{v}e \ CD4^+ T$  cell isolation kit II (Miltenyi Biotech) according to the manufacturer's instruction. *Rag2<sup>-/-</sup>* recipient
 mice were administered with 5×10<sup>6</sup> cells from WT or miR-210 KO mice spleen
 (suspended in 200 μl sterile PBS) via tail vein injection. Control *Rag2<sup>-/-</sup>* mice were
 injected with 200 μl PBS. After one week, the reconstituted mice were subjected for
 psoriasis-like mouse model induction.

6 Immunofluorescence staining. Six-micron-thick frozen sections of IMQ-induced 7 mouse psoriasis-like specimens and control specimens from healthy mice were used 8 for immunofluorescence analysis. After the sections were fixed for 15 min at RT in 4% 9 paraformaldehyde, they were washed three times in PBS and incubated in Blocking 10 Buffer (1% BSA in 1×PBS) for 1 h. Anti-mouse CD4-FITC Ab (BioLegend, USA, 11 Cat: 100406) was diluted 1:50 in Blocking Buffer. Sections were stained with anti-12 CD4 rabbit Ab and incubated overnight at 4 °C. After being washed in PBS and air-13 dried, sections were stained with DAPI (Invitrogen, USA). Image analysis was 14 performed using the fluorescence microscope DMI 4000B (Leica, Germany) and 15 Leica Qwin Std analysis software.

*Keratinocyte culture*. Normal human epidermal keratinocytes (NHEK,
PromoCell, Germany, Cat: C-12006) stored in liquid nitrogen were defrosted and
cultured in serum-free basal medium with supplementMix (PromoCell, Germany).
HaCaT cells stored in liquid nitrogen were revived and cultured in DMEM (Gibco,
USA) with 10% FBS (Gibco, USA) at 37 °C, 5% CO<sub>2</sub>. Medium was refreshed every 2
days and cells were subcultured according to the cell fusion. Cells at passage 2-6 were
used for subsequent experiments.

*Cytokines stimulation of keratinocytes*. NHEK or HaCaT cells were stimulated
with TGF-β (5 ng/ml, PeproTech), IL-23 (20 ng/ml, PeproTech), IL-6 (10 ng/ml,
PeproTech), IL-1β (10 ng/ml, PeproTech), IL-17A (200 ng/ml, PeproTech ) and IFN-

γ (200 ng/ml, PeproTech), respectively. The cells and culture supernatant were
 collected at corresponding time point for the subsequent experiments.

3 *Transfection of keratinocytes.* NHEK were seeded in 24-well plate with 1 ml
4 serum-free basal medium one day before transfection. Then 2 μl 200 μM agomir5 210/antagomir-210 or their corresponding controls were added into the medium for
6 the purpose of transfection. After 6 h, the medium was removed and new 1 ml serum7 free basal medium with supplementMix and 1 μl 200μM agomir-210/antagomir-210
8 or their corresponding controls were added into the well for another 48h. Then, the
9 cells and culture supernatant were collected for the subsequent experiments.

*CCK8 assay.* NHEK were seeded in 96-well plates in triplicates followed by
transfection with agomir-210 or antagomir-210, then cells were cultured in 100 μl
serum-free basal medium with supplementMix for 24 h or 48 h. The Cell Counting
Kit-8 (CCK8, Beyotime, China) was used to evaluate cell proliferation. Briefly, 10 μl
CCK8 solution was added to each well, and cells were incubated for 3 h at 37 °C, 5%
CO<sub>2</sub>. Cell viability was detected at 450 nm.

16 *Enzyme linked immunosorbent assay (ELISA).* The level of TGF-β and CCL20 in 17 the culture supernatant of keratinocytes were detected using the Human TGF-B 18 ELISA Kit and Human CCL20 ELISA Kit (4A Biotech Co., Beijing, China) 19 according to manufacturer's instructions. Briefly, serially diluted standards and 20 samples (1:2 dilution) were added into the wells (100  $\mu$ l/well) and incubated at 37  $\odot$ 21 for 90 min. Plate were washed four times with the washing buffer. Biotinylated 22 antibody working solution (100 µl/well) were added to the wells, which were 23 incubated at 37 °C for 1 h followed by washing four times. HRP-conjugated avidin at 24 a dilution of 1:100 (100  $\mu$ /well) were added to the cells, and were incubated at 37 °C 25 for 30 min. Then the plate was washed four times and incubated with DAB solution

(100 μl/well) for 10-20 min at 37 °C. Reactions were terminated with stopping
 solution (100 μl/well ) and OD450 values were obtained. Concentration of the
 cytokines were extrapolated from the standard curve.

4 Cell chemotaxis assay. Transwell assays (pore size 5.0 µm, Corning, USA) were performed to assess the chemotaxis of keratinocytes transfected with agomir-5 210/antagomir-210 or stimulated with TGF- $\beta$  to CD4<sup>+</sup>T cells. CD4<sup>+</sup>T cells (5×10<sup>5</sup>) 6 7 were suspended in 200 µl serum-free RPMI 1640 (Gibco, USA) medium, and were 8 seeded into the upper chambers in triplicates. 600 µl culture supernatant collected 9 from NHEK transfected with agomir-210/antagomir-210 or stimulated with TGF-B 10 was added to the lower chambers respectively as a chemotactic factor. Following a 90 11 min incubation in 37  $^{\circ}$ C, 5% CO<sub>2</sub>, the non-migrated cells on the upper surface of the 12 filter were carefully removed with a cotton swab. Cells that migrated through the 5.0 13 µm sized pores and adhered to the lower surface of the filter were fixed with 90% 14 ethanol for 15 min and then were stained with 0.1% crystal violet followed by 15 washing with deionized water. Cells in five non-overlapped fields were counted under 16 a microscope DMI 4000B (Leica, Germany), and the mean cell counts were 17 calculated.

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1 2 Supplemental Figure 1. IMQ-induced psoriasis-like mouse model. IMQ cream 3 was painted on the shaved back skin of BALB/c mice for 7 consecutive days. (A) 4 Phenotypic presentation and H&E staining of lesional skin from IMQ-treated mice. 5 Scale bar: 100µm. (B) Splenomegaly of mice treated with IMQ. (C) Mouse weight 6 was measured during IMQ application (Ctr, n=6; IMQ, n=6). (D) miR-210 expression 7 during the establishment of the psoriasis-like model was determined by RT-qPCR 8 (n=6). (E and F) Acanthosis and dermal cellular infiltrates were quantitated for 9 untreated mice (n=6) and IMQ-treated mice (n=6). All data are representative of at 10 least three independent experiments with three to six samples per group in each. Data represent the mean  $\pm$  SEM. \*\*\*P < 0.001. Two-tailed unpaired Student's *t*-test (E and 11 F) was used. Ctr, untreated mice; IMQ, IMQ-treated mice. 12



1 2 3 Supplemental Figure 2. T<sub>H</sub> cell-mediated immune imbalance in the IMQ-induced psoriasis-like mouse model. The percentage of  $T_H1$ ,  $T_H2$  and  $T_H17$  cells in splenic 4  $CD4^+$  T cells of IMQ-treated (n=4) or untreated BALB/c mice (n=4) in Supplemental 5 Figure 1 was detected by flow cytometry (upper panel). The statistical data are shown 6 in the lower panel. All flow cytometry figures represent one set of experiments with 7 four samples per group. Data represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P 8 < 0.001. Two-tailed unpaired Student's *t*-test was used. Ctr, untreated mice; IMQ, 9 IMQ-treated mice.



1 2 Supplemental Figure 3. IL-23-induced psoriasis-like mouse model. (A) Schematic 3 diagram for intradermal administration of IL-23. Ears of C57BL/6J mice were 4 injected intradermally with 1 mg rmIL-23 dissolved in 25 µl PBS into one ear and 25 5 µl PBS into the contralateral ear. Injections were continued every other day for 8 days 6 (days 1, 3, 5 and 7). (B) Ear thickness was measured on the indicated days (n=5). (C 7 and **D**) H&E staining (**C**) and phenotypic presentation (**D**) of ears injected with PBS 8 and ears injected with IL-23. Scale bar: 100µm. Data are representative of at least 9 three independent experiments with five samples per group in each. Data represent the 10 mean  $\pm$  SEM. \*\*\*P < 0.001.Two-tailed unpaired Student's *t*-test (**B**) was used. Ctr, PBS-treated ears. 11



Supplemental Figure 4. miR-210 expression is increased in EAE mice model. The expression of miR-210 in splenic CD4<sup>+</sup> T cells from the EAE mice (19<sup>th</sup> day, n=9) and control mice (n=9) was detected. The EAE model was induced in C57BL/6J mice. Data represent the mean  $\pm$  SEM. \*\*\**P* < 0.001. Two-tailed Mann-Whitney *U*-test was used.

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Supplemental Figure 5. CD4<sup>+</sup> T cells are increased in the psoriatic dermis. 3 Immunofluorescence was performed on mouse skin from untreated BALB/c mice (Ctr) 4 and IMQ-treated BALB/c mice (IMQ) to detect dermal CD4<sup>+</sup> T cells (left panel). 5 Scale bar, 50 µm; red arrows indicate dermal CD4<sup>+</sup> T cells. Then, dermal single-cell 6 suspension was obtained from healthy skin of Ctr and lesional skins of IMQ, and the 7 proportion of CD4<sup>+</sup> T cells was detected by flow cytometry (right panel). The 8 experiment was repeated at least three times.



1 2 Supplemental Figure 6. In vitro differentiation of human na we CD4<sup>+</sup> T cells. 3 Na we CD4<sup>+</sup> T cells from human peripheral blood were stimulated with plate-bound 4 anti-CD3 and soluble anti-CD28 under T<sub>H</sub>0-, T<sub>H</sub>1-, T<sub>H</sub>2-, T<sub>H</sub>17- and T<sub>reg</sub>-polarizing conditions in vitro. Five days later, the percentages of T<sub>H</sub>1, T<sub>H</sub>2, T<sub>H</sub>17 and iT<sub>reg</sub> cells 5 was detected by flow cytometry (upper panel). The mRNA levels of corresponding 6 7 specific cytokines and transcription factors in na  $\ddot{v}e$  CD4<sup>+</sup> T cells, T<sub>H</sub>0 cells and 8 polarized  $T_H$  cells were detected by RT-qPCR (n=3). All flow cytometry figures 9 represent one set of experiments, and each experiment was repeated at least three 10 times on different individuals. Data represent the mean  $\pm$  SEM. \*\*\*P < 0.001, NS: 11 not significant. One-way ANOVA with Dunnett post hoc test was used.



1 2 Supplemental Figure 7. miR-210 regulates T cells differentiation in mice. (A and 3 **B**) Na  $\ddot{v}e$  CD4<sup>+</sup>T cells from mouse spleen were stimulated with plate-bound anti-CD3 4 and soluble anti-CD28 under T<sub>H</sub>0-, T<sub>H</sub>1-, T<sub>H</sub>2-, T<sub>H</sub>17- and T<sub>reg</sub>-polarizing conditions 5 in vitro (n=3). Five days later, the percentages of  $T_H1$ ,  $T_H2$ ,  $T_H17$  and  $iT_{reg}$  cells was 6 detected by flow cytometry (A, four panels on the left). The mRNA expression of 7 corresponding specific cytokines and transcription factors (A, four panels on the right), 8 as well as miR-210 expression (**B**) in na  $\ddot{v}e$  CD4<sup>+</sup>T cells, T<sub>H</sub>0 cells and polarized T<sub>H</sub> 9 cells were analyzed by RT-qPCR. (C and D) Mouse na  $\ddot{v}e$  CD4<sup>+</sup> T cells were 10 transfected with agomir-210 (C, n=3), antagomir-210 (D, n=3) or their corresponding 11 controls and then differentiated into T<sub>H</sub>1, T<sub>H</sub>2, T<sub>H</sub>17 and iT<sub>reg</sub> cells for five days. The 12 percentage of T<sub>H</sub>1, T<sub>H</sub>2, T<sub>H</sub>17 and iT<sub>reg</sub> cells was detected by flow cytometry. 13 Statistical analysis data for the percentage of T<sub>H</sub>1, T<sub>H</sub>2, T<sub>H</sub>17 and iT<sub>reg</sub> cells were 14 shown in the lower panel. All flow cytometry figures represent one set of experiments, 15 and each experiment was repeated at least three times on different individuals. All 16 data are obtained from C57BL/6J mice and represent the mean  $\pm$  SEM. \*P < 0.05, 17 \*\*P < 0.01, \*\*\*P < 0.001, NS: not significant. One-way ANOVA with Dunnett post 18 hoc test (A and B) or two-tailed unpaired Student's t-test (C and D) were used.



1 2 3 Supplemental Figure 8. Abnormal cytokine expression in psoriatic CD4<sup>+</sup>T cells and skin lesions. (A and B) The mRNA levels of IL17A, IL17F, IFNG and IL4 in 4  $CD4^+$  T cells (A, n=10) and skin samples (B, n=10) from healthy controls and 5 psoriasis patients were determined by RT-qPCR. (C and D) The mRNA levels of 6 *Il17a, Il17f, Ifng* and *Il4* in splenic CD4<sup>+</sup>T cells (C, n=4) and dermis (D, n=6) from 7 untreated mice (Ctr) and IMQ-treated mouse (IMQ) were assessed by RT-qPCR. Data 8 (C and D) are obtained from BALB/c mice and were representative of at least three 9 independent experiments with three to six samples per group in each. Data represent 10 the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001, NS: not significant. Two-11 tailed unpaired Student's t-test was used.





1 2 Supplemental Figure 9. miR-210 promotes the infiltration of  $T_H 1$  and  $T_H 17$  cells 3 in dermis from IMQ-induced psoriasis-like mouse model. (A) Dermal single-cell 4 suspensions were obtained from agomir-NC (n=3) and agomir-210 (n=3) treated IMQ mice on the 7<sup>th</sup> day. Then the cells were stained for  $T_H1$  (CD4+IFN- $\gamma$ +) and  $T_H17$ 5 6 (CD4+IL-17A+) cells and analyzed by flow cytometry. (B) Statistical analysis data 7 for (A). All flow cytometry figures represent one set of experiments with three 8 samples per group. All data are obtained from BALB/c mice and represent the mean  $\pm$ 9 SEM. \*P < 0.05. Two-tailed unpaired Student's *t*-test was used.



Supplemental Figure 10. T cell differentiation of na ve CD4<sup>+</sup> T cells from miR-3 **210 KO mice.** Na  $\ddot{v}e$  CD4<sup>+</sup> T cells were isolated from spleen of WT (n=3) and KO 4 (n=3) mice and were then differentiated into  $T_H1$ ,  $T_H2$ ,  $T_H17$  and  $iT_{reg}$  cells in vitro. The percentage of  $T_H1$ ,  $T_H2$ ,  $T_H17$  and  $iT_{reg}$  cells was detected by flow cytometry 5 (upper panel). Statistical data are shown in the lower panel. All flow cytometry 6 7 figures represent one set of experiments, and each experiment was repeated at least 8 three times. All data are obtained from miR-210 KO or WT mice with C57BL/6J background and represent the mean  $\pm$  SEM. \**P* < 0.05, \*\**P* < 0.01, \*\*\**P* < 0.001, NS: 9 not significant. Two-tailed unpaired Student's t-test was used. 10



1 2 Supplemental Figure 11. miR-210 delation alleviates IL-23 induced psoriasis-like 3 dermatitis. (A) Phenotypic presentation and H&E staining of mouse ears for WT or 4 KO mice treated with IL-23 or PBS. Scale bar, 100 µm. (B) Dermal cellular infiltrates 5 of mouse ears for IL-23-treated WT (n=5) and KO (n=5) mice as well as PBS-treated 6 WT (n=5) mice. (C) Ear thickness of IL23-treated WT (n=5) and KO (n=5) mice as 7 well as PBS-treated WT (n=5) mice were measured on the indicated days. All data are representative of at least three independent experiments with five samples per group 8 9 in each. All data are obtained from miR-210 KO or WT mice with C57BL/6J background and represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001. 10 11 One-way ANOVA (C) or with Bonferroni post hoc test (B) were used.



1 2 Supplemental Figure 12. miR-210 expression in CD4<sup>+</sup> T cells is pivotal for IMQ-3 induced psoriasis-like skin inflammation. (A) Lethally irradiated WT or miR-210 4 KO mice were adoptively transferred with miR-210 KO or WT bone marrow, and 5 then the generated chimeric mice were subjected to IMQ-induced psoriasis-like 6 mouse model. Representative phenotypic presentation and H&E staining of skin 7 lesions derived from indicated groups, n=5 per group. Scale bar: 100µm. (B) PASI 8 score of mice in (A), n=5 per group. (C and D) Acanthosis (C, n=5) and dermal 9 cellular infiltrates (**D**, n=5) were quantitated for skin lesions derived from indicated groups. (E)  $Rag2^{-/-}$  mice were transferred with na we CD4<sup>+</sup> T cells derived from WT 10 11 or miR-210 KO mice or not, then the mice were subjected to IMO-induced psoriasis-12 like mouse model. Representative phenotypic presentation and H&E staining of skin 13 lesions derived from indicated groups, n=4 per group. Scale bar: 100µm. (F) PASI score of mice in (E), n=4 per group. (G and H) Acanthosis (G, n=4) and dermal 14 15 cellular infiltrates (H, n=4) were quantitated for skin lesions derived from indicated groups. Both miR-210 KO or WT mice and *Rag2<sup>-/-</sup>* mice have C57BL/6J background. 16 17 Data represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001, NS: not 18 significant. One-way ANOVA with Bonferroni post hoc test (B-D and F-H) was used.



1 2 3 Supplemental Figure 13. RNA-binding protein immunoprecipitation (RIP) proves STAT6 and LYN as direct targets of miR-210. (A) Ago2-4 immunoprecipitates were assayed for mRNA levels of miR-210 (left panel), STAT6 5 (middle panel) and LYN (right panel) in CD4<sup>+</sup> T cells lysates derived from healthy 6 controls (n=3) or psoriasis patients (n=3). (B) U1 expression was tested in SNRNP70 7 or IgG immunoprecipitates from normal CD4<sup>+</sup>T cell lysates, n=3 per group. All data 8 are representative of at least three independent experiments. All data represent the 9 mean  $\pm$  SEM. Two-tailed unpaired Student's *t*-test was used. 10



1 2 3 4 Supplemental Figure 14. miR-210 regulates the expression of STAT6 and LYN. (A and B) Statistical analysis data for STAT6 and LYN protein expression in Figure 6C, n=6 per group. (C and D) Statistical analysis data for STAT6 (C) and LYN (D) 5 protein expression in Figure 6D, n=5 per group. (E and F) The mRNA levels of Stat6 6 (E) and Lyn (F) were assessed by RT-qPCR in splenic  $CD4^+T$  cells from IMQ-treated 7 WT and KO mice, n=5 per group. Data (C-F) are obtained from miR-210 KO or WT 8 mice with C57BL/6J background. All data represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P 9 < 0.01, \*\*\*P < 0.001. Two-tailed unpaired Student's *t*-test (A-C and E) or two-tailed Mann-Whitney U-test (**D** and **F**) were used. 10 11



1 2 Supplemental Figure 15. The expression of STAT6 and LYN are decreased in 3 **psoriatic CD4<sup>+</sup> T cells.** (A) The expression and subcellular localization of STAT6 4 and LYN in CD4<sup>+</sup>T cells from healthy individuals (N) and psoriasis patients (P). Red 5 represents STAT6, green represents LYN, blue represents DAPI. (B and C) Statistical 6 analysis data for STAT6 and LYN protein expression in Figure 6, E and F, n=6 per 7 group. (D and E) STAT6 and LYN mRNA expression was detected by RT-qPCR in 8  $CD4^+T$  cells from psoriasis patients (**D**, n=11) and IMQ-induced psoriasis-like mouse 9 model (E, n=8) as well as their healthy controls. (F) Correlation of STAT6 (F, left panel, n=11) or LYN (F, right panel, n=11) mRNA expression with miR-210 10 11 expression in  $CD4^+$  T cells from psoriasis patients. Data (C and E) were obtained 12 from BALB/c mice. Data represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 13 0.001. Two-tailed Mann-Whitney U-test (B and C), two-tailed unpaired Student's t-14 test (**D** and **E**) or Spearman's *r*-test (**F**) were used.



2 Supplemental Figure 16. The expression of STAT6 and LYN are decreased in 3 psoriatic skin lesion. (A) Statistical analysis data for STAT6 and LYN protein 4 expression in Figure 6G, n=6 per group. (B) Statistical analysis data for STAT6 and 5 LYN protein expression in Figure 6H, n=6 per group. (C-F) STAT6 and LYN mRNA 6 expression was detected by RT-qPCR in skin lesions from psoriasis patients (C and D, 7 n=10 per group) and IMQ-induced psoriasis-like mouse model (E and F, n=10 per 8 group) as well as their healthy controls. Data (B, E and F) were obtained from BALB/c mice. Data represent the mean  $\pm$  SEM. \**P* < 0.05, \*\**P* < 0.01, \*\*\**P* < 0.001, 9 10 NS: not significant. Two-tailed Mann-Whitney U-test (A, B and D) or two-tailed 11 unpaired Student's *t*-test (C, E and F) were used. 12



1 2 Supplemental Figure 17. HIF-1a binds to the miR-210 promoter. (A and B) 3 Schematic representation of the proximal 1 kb of the miR-210 promoter, including the 4 indicated reporter constructs (pGL3-basic) containing the full-length promoter (pGL3-5 S3) and additional truncation variants (pGL3-S2 and pGL3-S1) (A). Reporter 6 constructs were transfected into HEK293T cells, and luciferase activity was detected 7 (**B**, n=3 per group). S1:-501~-1000 bp; S2:-1~-500 bp; S3:-1~-1000 bp. (**C**) The 8 structure diagram for predicted HIF-1a binding site (BS) in S2 area of miR-210 9 promoter region. (D) Luciferase activity was detected in HEK293T cells that were 10 transfected with the recombinant plasmid HIF-1 $\alpha$  WT (n=3) or a reporter construct 11 with point-mutated HIF-1 $\alpha$  BS in S2 (HIF-1 $\alpha$  MU, n=3). (E) Luciferase activity was 12 detected in HEK293T cells co-transfected with HIF-1a WT or HIF-1a MU and 13 plasmid control or HIF-1 $\alpha$  overexpression plasmid, n=3 per group, +: added; -: not 14 added. (F) HIF-1 $\alpha$  binds to the miR-210 promoter region. CD4<sup>+</sup>T cell lysates derived 15 from psoriasis patients were used to perform chromatin immunoprecipitation (ChIP) 16 assays. M, marker. Data (**B**, **D** and **E**) are representative of at least three independent 17 experiments with three samples per group in each. Data represent the mean  $\pm$  SEM. 18 \*\*P < 0.01, \*\*\*P < 0.001, NS: not significant. One-way ANOVA with Dunnett post 19 hoc test (**B**) or two-tailed unpaired Student's *t*-test (**D** and **E**) were used.





2 Supplemental Figure 18. HIF-1α expression is increased in psoriatic CD4<sup>+</sup> T cells 3 and skin lesions. (A and B) Western blotting analysis of HIF-1 $\alpha$  expression in CD4<sup>+</sup> 4 T cells (n=8) and skin lesions (n=6) from healthy controls and psoriasis patients. 5 Statistical analysis data for HIF-1 $\alpha$  protein expression were shown in (**B**). (**C** and **D**) 6 Western blotting analysis of HIF-1 $\alpha$  expression in splenic CD4<sup>+</sup>T cells (n=3) and skin 7 lesions (n=3) derived from untreated mice (Ctr) and IMQ-treated mice (IMQ). 8 Statistical analysis data for HIF-1 $\alpha$  protein expression were shown in (D). (E) 9 Correlation of HIF-1a protein level and miR-210 expression in CD4<sup>+</sup> T cells from 10 psoriasis patients, n=8. Data (C and D) were obtained from BALB/c mice. Data represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001. Two-tailed Mann-11 Whitney U-test (**B**), two-tailed unpaired Student's t-test (**D**) or Spearman's r-test (**E**) 12 13 were used.



- 1 2 3 Supplemental Figure 19. HIF-1a regulates the expression of miR-210. (A and B)  $CD4^+T$  cells from psoriasis patients were transfected with HIF-1 $\alpha$  siRNA (n=3), and 4 normal human CD4<sup>+</sup> T cells were transfected with the HIF-1a overexpression plasmid
- 5 (n=3) for 2 days. Then, cells were collected to detect HIF-1 $\alpha$  protein level (A) and 6
- miR-210 expression level (**B**). Data represent the mean  $\pm$  SEM. \**P* < 0.05, \*\**P* < 0.01.
- 7 Two-tailed unpaired Student's *t*-test was used.
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Supplemental Figure 20. The statistical analysis data for HIF-1a, STAT6 and

1 2 3 4 LYN protein expression in Figure 8B. N=3 per group. Data represent the mean  $\pm$ SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001. One-way ANOVA with Dunnett post hoc

<sup>5</sup> test was used.



Supplemental Figure 21. IL-23 promotes the interaction between HIF-1α and

**BP300.** Normal CD4<sup>+</sup>T cells were stimulated with or without IL-23 (20 ng/ml) for 48h.

4 Then P300 (left panel) or HIF-1 $\alpha$  (right panel) was immunoprecipitated and analyzed

5 by western blot using antibodies against the proteins indicated on the left of each

6 panel. The data is representative of at least three independent experiments.

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- 1 2 3 Supplemental Figure 22. P300 affects the expression of miR-210 in CD4<sup>+</sup> T cells.
- The protein levels of P300 (**A**) and miR-210 expression (**B**) in psoriatic CD4<sup>+</sup>T cells
- 4 transfected with P300 siRNA (n=3) or siRNA control (n=3). Data represent the mean
- 5  $\pm$  SEM. \**P* < 0.05. Two-tailed unpaired Student's *t*-test (**B**) was used.
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Supplemental Figure 23. The histone H3 acetylation (H3ac) levels on the miRpromoter was increased in psoriatic CD4<sup>+</sup>T cells. The H3ac levels on the miRpromoter in CD4<sup>+</sup>T cells from psoriasis patients (n=10) and normal controls (n=10). Data represent the mean  $\pm$  SEM. \*\*\**P* < 0.001. Two-tailed Mann-Whitney *U*test was used.

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1 2 3 4 5 6 Supplemental Figure 24. IL-23 increases the level of H3ac on miR-210 promoter by inducing the combination of HIF-1 $\alpha$  and P300. The enrichments of HIF-1 $\alpha$ , P300 and H3ac on the miR-210 promoter in normal CD4<sup>+</sup>T cells stimulated with IL-23, n=3 per group. Data represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, NS: not significant. One-way ANOVA with Dunnett post hoc test was used.



- Supplemental Figure 25. miR-210 has no obvious effect on the mRNA expression
  of T<sub>H</sub>22 related genes in vivo. (A and B) The mRNA levels of *Il22, Ahr, Ccr4, Ccr6 and Ccr10* in splenic CD4<sup>+</sup> T cells from IMQ-induced mice injected with agomir210/agomir-NC (A, n=5) or antagomir-210/antagomir-NC (B, n=5) on the 7<sup>th</sup> day.
  Data are obtained from BALB/c mice and represent the mean ± SEM. \*\**P* < 0.01, NS:</li>
  not significant. Two-tailed unpaired Student's *t*-test was used.





1 2 Supplemental Figure 26. The effect of miR-210 on  $T_{\rm H}17$  cell differentiation under normoxia or reoxygenation. (A and B) Na  $\ddot{v}e$  CD4<sup>+</sup>T cells were sorted from 3 4 the spleens of WT and KO mice, and cells were stimulated with 2 µg/ml plate-bound 5 anti-CD3 and 2 µg/ml soluble anti-CD28 under T<sub>H</sub>17-skewing conditions (10 µg/ml 6 anti-IL-4, 10  $\mu$ g/ml anti-IFN- $\gamma$ , 2 ng/ml TGF- $\beta$  and 0.2 ng/ml IL-6) for three days. For 7 the reoxygenation assay, T cells were first primed under a low O<sub>2</sub> concentration (5% 8 O<sub>2</sub>) for 36 h, and the cells were then transferred into a normoxic incubator for the rest 9 of the culture. The differentiated cells were analyzed by flow cytometry for cytokine 10 production by intracellular staining of IL-17A (A). The statistical analysis data are 11 shown in (**B**), n=3 per group. All data are obtained from miR-210 KO or WT mice with C57BL/6J background and represent the mean  $\pm$  SEM. \*P < 0.05, \*\*\*P < 0.001, 12 13 NS: not significant. One-way ANOVA with Bonferroni post hoc test was used.



1 2 Supplemental Figure 27. miR-210 promotes the proliferation of keratinocytes. (A) 3 HaCaT cells were stimulated with IL-23 (20 ng/ml), TGF-β (5 ng/ml), IL-6 (10 4 ng/ml), IL-1β (10 ng/ml), IL-17A (200 ng/ml) and IFN-γ (200 ng/ml). Cells were 5 collected to detect the expression of miR-210 at 0h, 12h and 24h. N=3 per group. (B) 6 Normal human epidermal keratinocytes (NHEKs) were transfected with agomir-210 7 or antagomir-210 as well as their corresponding controls for 24 h (left panel, n=5 per 8 group) and 48 h (right panel, n=5 per group). Then the proliferation of keratinocytes 9 was analyzed by CCK8 assay. (C) The tendency of keratinocyte proliferation in (B). Data (A-C) are representative of at least three independent experiments with five 10 samples per group in each. Data represent the mean  $\pm$  SEM. \**P* < 0.05, \*\**P* < 0.01, 11 12 \*\*\*P < 0.001, NS: not significant. One-way ANOVA with Dunnett post hoc test (A) 13 or two-tailed unpaired Student's *t*-test (**B**) were used.



2 Supplemental Figure 28. miR-210 promotes the chemotaxis of keratinocytes to 3  $CD4^+$  T cells. (A) NHEKs were transfected with agomir-210 (left panel, n=3), 4 antagomir-210 (right panel, n=3) and their corresponding controls for 48 h. Then, 5 cells were collected to detect the mRNA levels of cytokines and chemokines secreted 6 by keratinocytes. (B) The cell supernatant was collected to detect the secretion of 7 TGF- $\beta$  (left panel, n=5) and CCL20 (right panel, n=5) by ELISA. (C and D) NHEKs 8 were transfected with agomir-210, antagomir-210 and their corresponding controls (C, 9 n=8) or stimulated with TGF- $\beta$  (5 ng/ml) (D, n=8) for 48 h. Then, the culture 10 supernatants were collected and added to the lower chambers, and normal human 11 CD4<sup>+</sup> T cells were added to the upper chambers of transwell plates for 90 min. The upper chamber was removed and stained with crystal violet, and cells were counted. 12 13 Data represent the mean  $\pm$  SEM. \*P < 0.05, \*\*P < 0.01, \*\*\*P < 0.001, NS: not 14 significant. Two-tailed unpaired Student's t-test was used.

Sample	Age/	PASI	Sample	Age/	PASI	Sample	Age/	PASI
ID	Gender	score	ID	Gender	score	ID	Gender	score
1	50/M	20.6	22	36/F	0.7	43	22/M	8.2
2	51/M	7.8	23	19/F	0.7	44	18/F	2.4
3	31/M	17.8	24	25/F	9.5	45	31/F	5.6
4	53/F	3.9	25	24/F	8.6	46	29/F	12.9
5	30/F	25.3	26	38/M	13.4	47	38/F	8.1
6	40/M	6.7	27	54/M	10.6	48	21/M	2.5
7	41/M	17.4	28	40/M	11.8	49	42/M	10.4
8	55/F	7.2	29	56/M	10.2	50	46/M	19.8
9	36/M	3.3	30	30/M	0.2	51	25/M	5.2
10	20/M	29.2	31	29/M	2.4	52	26/F	12.0
11	34/M	24.0	32	45/M	5.9	53	20/F	6.4
12	43/M	6.9	33	22/M	18.1	54	26/M	11.0
13	46/M	10.2	34	31/M	10.7	55	53/M	12.0
14	53/M	18.3	35	45/M	8.0	56	50/F	13.6
15	21/M	11.6	36	30/M	4.0	57	43/M	11.1
16	50/F	12.8	37	42/F	4.5	58	28/F	17.7
17	44/M	13.2	38	48/M	8.8	59	26/M	9.0
18	54/M	2.5	39	27/M	8.9	60	52/F	10.6
19	45/M	10.7	40	30/M	12.5	61	23/M	9.3
20	26/M	13.4	41	63/M	27.2	62	23/M	20.4
21	37/M	8.9	42	20/M	10.4	63	32/F	19.2

## **1** Supplemental Table 1. Information for patients with psoriasis vulgaris



All patients were clinically diagnosed as psoriasis vulgaris. M, male; F, female;

4

<sup>3</sup> PASI: psoriasis area and severity index.

# 1 Supplemental Table 2. Primer sequences and siRNA sequences.

Quantitati	Quantitative PCR primers				
Human-STAT6-F	5'-GGAGCACCATCTTGCAACAC-3'				
Human-STAT6-R	5'-GTGGCGGAACTGTTCCATAA-3'				
Human-LYN-F	5'-ATGTGAGAGATCCAACGTCCAA-3'				
Human-LYN-R	5'-AAAAGCTGCCTTTCTGCGTC-3'				
Human- <i>IL4</i> -F	5'-GGTCACAGGAGAAGGGACGCC-3'				
Human- <i>IL4</i> -R	5'-TGCGAAGCACCTTGGAAGCCC-3'				
Human- <i>IFNG</i> -F	5'-CATCCAAAAGAGTGTGGAGACA-3'				
Human- <i>IFNG</i> -R	5'-TGCTTTGCGTTGGACATTCAAG-3'				
Human- <i>IL17A</i> -F	5'-ATTACTACAACCGATCCACCTC-3'				
Human- <i>IL17A</i> -R	5'-TGGTAGTCCACGTTCCCAT-3'				
Human- <i>IL17F</i> -F	5'-AGTAAGCCACCAGCGCAACATG-3'				
Human- <i>IL17F</i> -R	5'-CTCAGAAAGGCAAGCCCCAATA-3'				
Human- <i>IL6</i> -F	5'-AATTCGGTACATCCTCGACGGC-3'				
Human- <i>IL6</i> -R	5'-GCCAGTGCCTCTTTGCTGCTTT-3'				
Human-TNFA-F	5'-GGACACCATGAGCACTGAAAGC-3'				
Human-TNFA-R	5'-TGCCACGATCAGGAAGGAGAAG-3'				
Human- <i>TGFB</i> -F	5'-GCAACAATTCCTGGCGATAC-3'				
Human- <i>TGFB</i> -R	5'-AAGGCGAAAGCCCTCAAT-3'				
Human-TBX21-F	5'-CAGGGACGGCGGATGTTCC-3'				
Human-TBX21-R	5'-TCCACACTGCACCCACTTGC-3'				
Human-GATA3-F	5'-ACAGAACCGGCCCCTCATTAA-3'				
Human-GATA3-R	5'-TGGTCTGACAGTTCGCACAGGA-3'				
Human- <i>RORC-</i> F	5'-AGGCCATTCAGTACGTGGTGGA-3'				
Human- <i>RORC</i> -R	5'-CGTGCGGTTGTCAGCATTGTAG-3'				
Human-FOXP3-F	5'-CTTTCACCTACGCCACGCTCAT-3'				
Human-FOXP3-R	5'-TCCAGGTGGCAGGATGGTTTCT-3'				

Human-CCL20-F	5'-ATTGTGCGTCTCCTCAGTAAAAA-3'
Human-CCL20-R	5'-TGTGATGCTTAAACAAAGCAAAC-3'
Human-CCL5-F	5'-CAGTCGTCTTTGTCACCCGA-3'
Human-CCL5-R	5'-TGTAACTGCTGCTGTGTGGT-3'
Human-CXCL10-F	5'-AACTGTACGCTGTACCTGCAT-3'
Human-CXCL10-R	5'-GCATCGATTTTGCTCCCCTC-3'
Human-GAPDH-F	5'-ATGGGGAAGGTGAAGGTCG-3'
Human-GAPDH-R	5'-GGGGTCATTGATGGCAACAATA-3'
Mouse-Stat6-F	5'-GAGTTCCTGGTCGGTTCAGA-3'
Mouse-Stat6-R	5'-GCTCTCCAAGGTGCTGATGT-3'
Mouse-Lyn-F	5'-CGGCTGCTTCACTATCAAATCTG-3'
Mouse-Lyn-R	5'-CTCATCACATCTGCGTTGGTTC-3'
Mouse-114-F	5'-CATATCCACGGATGCGACAA-3'
Mouse-114-R	5'-CGTCCTCACAGCAACGAAGA-3'
Mouse-Ifng-F	5'-AGACAATCAGGCCATCAGCA-3'
Mouse-Ifng-R	5'-CAACAGCTGGTGGACCACTC-3'
Mouse-1117a-F	5'-ATGCTGTTGCTGCTGCTGAG-3'
Mouse- <i>ll17a</i> -R	5'-GGAAGTCCTTGGCCTCAGTG-3'
Mouse- <i>1117f</i> -F	5'-GGAGGTAGCAGCTCGGAAGA-3'
Mouse-1117f-R	5'-GGAGCGGTTCTGGAATTCAC-3'
Mouse-1122-F	5'-ATGAGTTTTTCCCTTATGGGGAC-3'
Mouse-1122-R	5'-GCTGGAAGTTGGACACCTCAA-3'
Mouse-Ahr-F	5'-AGCCGGTGCAGAAAACAGTAA-3'
Mouse-Ahr-R	5'-AGGCGGTCTAACTCTGTGTTC-3'
Mouse-Ccr4-F	5'-GGAAGGTATCAAGGCATTTGGG-3'
Mouse-Ccr4-R	5'-GTACACGTCCGTCATGGACTT-3'
Mouse-Ccr6-F	5'-CCTGGGCAACATTATGGTGGT-3'
Mouse-Ccr6-R	5'-CAGAACGGTAGGGTGAGGACA-3'

Mouse-Ccr10-F	5'-GGACTTTACTCCGGGTACGAT-3'		
Mouse-Ccr10-R	5'-CAGGGAGACACTGGGTTGGA-3'		
Mouse- <i>Tbx21</i> -F	5'-CAACAACCCCTTTGCCAAAG-3'		
Mouse- <i>Tbx21</i> -R	5'-TCCCCCAAGCAGTTGACAGT-3'		
Mouse-Gata3-F	5'-AGAACCGGCCCCTTATGAA-3'		
Mouse-Gata3-R	5'-AGTTCGCGCAGGATGTCC-3'		
Mouse-Rorc-F	5'-GGACAGGGAGCCAAGTTCTCA-3'		
Mouse-Rorc-R	5'- CACAGGTGATAACCCCGTAGTGG-3'		
Mouse-Foxp3-F	5'-TTGCCAAGCTGGAAGACTGC-3'		
Mouse-Foxp3-R	5'-CAGACGGTGCCACCATGACT-3'		
Mouse-Gapdh-F	5'-AGGTCGGTGTGAACGGATTTG-3'		
Mouse-Gapdh-R	5'-TGTAGACCATGTAGTTGAGGTCA-3'		
RIP primers			
Human-STAT6-RIP-F	5'-GGAAGGGAAGTTCAGGCTCT-3'		
Human-STAT6-RIP-R	5'-ATGCCCTAACCTGTGCTCTT-3'		
Human-LYN-RIP-F	5'-GCCTTGTTTTGCTTCTCCCA-3'		
Human-LYN-RIP-R	5'-CTTCCACACATGCTGGACAC-3'		
ChIP-qI	PCR primers		
Forword primer	5'-GGAAATTGGCAGGACTGGG-3'		
Reverse primer	5'-GCCTCTAAGAGT CAGTGGGG-3'		
siRNA	sequences		
Human-STAT6-siRNA-sense	5'-CAUGAGCAUGCAGCUUGGCCCAGAU-3'		
Human-STAT6-siRNA-anti-sense	5'-AUCUGGGCCAAGCUGCAUGCUCAUG-3'		
Human-LYN-siRNA-sense	5'-CCUGUAUCAGCGACAUGAUUAAACA-3'		
Human-LYN-siRNA-anti-sense	5'-UGUUUAAUCAUGUCGCUGAUACAGG-3'		
Human-HIF-1α-siRNA-sense	5'-GAAAUUCCUUUAGAUAGCAAGACUU-3'		
Human- HIF-1α-siRNA-anti-sense	5'-AAGUCUUGCUAUCUAAAGGAAUUUC-3'		
Human-P300-siRNA-sense	5'-CAGGUAUGAUGAACAGUCCAGUAAA-3'		

	Human-P300-siRNA-anti-sense	5'-UUUACUGGACUGUUCAUCAUACCUG-3'
1		

# 1 Supplemental Table 3. Potential target genes of hsa-miR-210-3p predicted by

## 2 bioinformatic tools.

Gene	miRWalk	miRanda	RNA22	Targetscan
STAT6	1	1	1	1
LYN	1	1	0	1
SPRED2	1	1	1	1
CEND1	1	1	1	1
MFSD4	1	1	1	1
FLNC	1	1	1	1
GGNBP2	1	1	0	1
MAB21L3	1	1	1	1
USH2A	1	1	1	1
ATXN1	1	1	1	1
B4GALT5	1	1	1	1
FOXD2	1	1	1	1
C3orf18	1	1	1	1
IGF2	1	1	1	1
ELOVL6	1	1	1	1
OXTR	1	1	1	1
SLCO4C1	1	1	1	1
DSC3	1	1	1	1
UPF1	1	1	1	1
ARHGAP35	1	1	1	1
ADAMTS5	1	1	1	1
SDF2	1	1	0	1
CCDC68	1	1	1	1
CNTNAP5	1	1	1	1
CUL3	1	1	1	1
KIAA0141	1	1	1	1
RGMA	1	1	1	1
CLEC16A	1	1	1	1
INHRR	1	1	1	1
CHRNR1	1	1	1	1
NR3C2	1	1	1	1
SIN3R	1	1	1	1
<i>ZNE445</i>	1	1	1	1
SMG5	1	1	1	1
RIT1	1	1	1	1
COX10	1	1	1	1
NSUN5	1	1	1	1
TMEM105	1	1	1	1
FENA3	1	1	1	1
	1	1	1	1
VAMI 4 ZNE440	1	1	1	1
	1	1	1	1
SIC646	1	1	1	1
TOPIA	1	1	1	1
	1	1	1	1
ISFANIU	1	1		1
	1	<u> </u>	1	1
	1	<u> </u>	1	1
	1	l		1
ACVKIB			0	

CACMAIC         1         1         1         1         1           TUSCS         1         1         1         1         1         1           TFRC         1         1         1         1         1         1           RAB9B         1         1         1         1         1         1           PRKCA         1         1         1         1         1         1           MEP2D         1         1         1         1         1         1           MMFK6         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAPK         1         1         1         1         1         1           RASCI	Gene	miRWalk	miRanda	RNA22	Targetscan
TUSCS         1         1         1         1         1           TFRC         1         1         1         1         1         1           RAB9B         1         1         1         1         1         1           PRKCA         1         1         1         1         1         1           PRKCA         1         1         1         1         1         1           MPR         1         1         1         1         1         1           MAT         1         1         1         1         1         1           MNT         1         1         1         1         1         1           MSCLI         1         1         1         1         1         1           AB3B         1         1         1         1         1         1           RCD1         1         1         1         1         1         1           RAB3B         1         1         1         1         1         1           RCD1         1         1         1         1         1         1           RCD2 <t< td=""><td>CACNA1C</td><td>1</td><td>1</td><td>0</td><td>1</td></t<>	CACNA1C	1	1	0	1
TFRC         1         1         1         1         1           RAB9B         1         1         1         1         1         1           PRKCA         1         1         1         1         1         1           PRKCA         1         1         1         1         1         1           MEF2D         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAT         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           KCKS         1         1         1         1         1         1           RASTA         1         1         1         1         1         1           RAB7A         1         1         1         1         1         1           REM12	TUSC5	1	1	1	1
RABB         1         1         1         1         1           PRKCA         1         1         1         1         1         1           PRKPP         1         1         1         1         1         1           MFTD         1         1         1         1         1         1           ADAMTS6         1         1         1         1         1         1           MAT         1         1         1         1         1         1           ASCLI         1         1         1         1         1         1           RAB3B         1         1         1         1         1         1           RADTI         1         1         1         1         1         1           RADTI         1         1         1         1         1         1           PMT         1	TFRC	1	1	1	1
PRKCA         1         1         1         1         1         1           FKBP9         1         1         1         1         1         1           MF72D         1         1         1         1         1         1           ADAMTS6         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAT         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MASCLI         1         1         1         1         1         1           RASZB         1         1         1         1         1         1           RAB7A         1         1         1         1         1         1           RAB7A         1         1         1         1         1         1	RAB9B	1	1	1	1
FKBP9         1         1         1         1         1           MEF2D         1         1         1         1         1           MAMTS6         1         1         1         1         1           MARTS5         1         1         1         1         1           MARTS5         1         1         1         1         1           MARTS6         1         1         1         1         1           MARTS5         1         1         1         1         1           MARTS6         1         1         1         1         1           ASSB         1         1         1         1         1           RABTA         1         1         1         1         1           SC12         1         1         1         1         1           POMT2         1         1         1         1 <td< td=""><td>PRKCA</td><td>1</td><td>1</td><td>1</td><td>1</td></td<>	PRKCA	1	1	1	1
MEF2D         1         1         1         1         1         1           ADAMTS6         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1           MAT         1         1         1         1         1         1           AB2B         1         1         1         1         1         1           RAB7A         1         1         1         1         1         1           RAD7A         1         1         1         1         1         1           RAD7A         1         1         1         1         1         1           RAD7A         1         1         1         1         1         1           RAD7	FKBP9	1	1	1	1
ADAMTS6         1         1         1         1         1         1           KIA1755         1         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1         1           MAPKI         1         1         1         1         1         1         1           MAT         1         1         1         1         1         1         1           MAT         1         1         1         1         1         1         1           ASCLI         1         1         1         1         1         1         1           RAB7A         1         1         1         1         1         1         1           SCL02         1         1         1         1         1         1           AB7A         1         1         1         1         1         1           ADH5A         1         1         1         1         1           POMT2	MEF2D	1	1	1	1
KIAA1755         1         1         1         1         1         1           MAPK1         1         1         1         1         1         1         1           MNT         1         1         1         1         1         1         1           ASCL1         1         1         1         1         1         1         1           ASCL1         1         1         1         1         1         1         1           RAB3B         1         1         1         1         1         1         1           RAD7A         1         1         1         1         1         1         1           RAD7A         1         1         1         1         1         1         1           SCIA2         1         1         1         1         1         1         1           ALDH5AI         1         1         1         1         1         1         1           IRCD11         1         1         1         1         1         1         1           IRCD2         1         1         1         1         1	ADAMTS6	1	1	1	1
MAPKI         1 <td>KIAA1755</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	KIAA1755	1	1	1	1
MNT         1 <td>MAPK1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	MAPK1	1	1	1	1
Image         Image <thimage< th="">         Image         <thi< td=""><td>MNT</td><td>1</td><td>1</td><td>1</td><td>1</td></thi<></thimage<>	MNT	1	1	1	1
ASCLI         1 <td>KCNK5</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	KCNK5	1	1	1	1
THBS2       1       1       1       1       1         RAB3B       1       1       1       1       1       1         RAB3B       1       1       1       1       1       1       1         RAB3B       1       1       1       1       1       1       1       1         RAB3B       1       1       1       1       1       1       1       1         SC1A2       1       1       1       1       1       1       1       1         ALDH5AI       1       1       1       1       1       1       1       1         POM72       1       1       1       1       1       1       1       1         BM76       1       1       1       1       1       1       1       1         DAK       1       1       1       1       1       1       1       1         TC24       1       1       1       1       1       1       1       1         ICMT       1       1       1       1       1       1       1         TC24       1 <td>ASCL1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	ASCL1	1	1	1	1
AB35         1	THRS?	1	1	1	1
ABDD       1       1       1       1       1         RAB7A       1       1       1       1       1       1         KCTD11       1       1       1       1       1       1       1         SLC1A2       1       1       1       1       1       1       1       1         TREML2       1       1       1       1       1       1       1       1         ALDH5A1       1       1       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1       1         DAK       1       1       1       1       1       1       1       1       1         TC24       1       1       1       1       1       1       1       1         MSANTD1       1       1       1       1       1       1       1       1	RAR3R	1	1	1	1
NADA         1	RAB7A	1	1	1	1
NC1D11       1       1       1       1       1         TREML2       1       1       1       1       1       1         TREML2       1       1       1       1       1       1       1         TPMT       1       1       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1       1         BMP6       1       1       1       1       1       1       1       1         TECPR2       1       1       1       1       1       1       1       1       1       1         ICAT       1       1       1       1       1       1       1       1       1       1         TCSDCI       1       1       1       1       1       1 <td>KCTD11</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	KCTD11	1	1	1	1
SLC NZ         1         1         1         1         1         1           ALDH5AI         1         1         1         1         1         1         1           TREML2         1         1         1         1         1         1         1           TREM         1         1         1         1         1         1         1           POMT2         1         1         1         1         1         1         1           RAB27B         1         1         1         1         1         1         1           BMP6         1         1         1         1         1         1         1         1           DAK         1         1         1         1         1         1         1           TC24         1         1         1         1         1         1         1           ICMT         1         1         1         1         1         1         1           ICMT         1         1         1         1         1         1         1           ICMT         1         1         1         1         1<	SLC1A2	1	1	1	1
IALDH5AI       1       1       1       1       1         TPMT       1       1       1       1       1       1         POMT2       1       1       1       1       1       1       1         RAB27B       1       1       1       1       1       1       1       1         RAB27B       1       1       1       1       1       1       1       1         BMP6       1       1       1       1       1       1       1       1         DAK       1       1       1       1       1       1       1       1         DAK       1       1       1       1       1       1       1       1         DAK       1       1       1       1       1       1       1       1         TC24       1       1       1       1       1       1       1       1         CAPN9       1       1       1       1       1       1       1       1         NTSDC1       1       1       1       1       1       1       1         NPTX1       1 <td>TDEMI 2</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	TDEMI 2	1	1	1	1
ALDRSAT       1       1       1       1       1         IPMT       1       1       1       1       1       1         POMT2       1       1       1       1       1       1         RAB27B       1       1       1       1       1       1         BMP6       1       1       1       1       1       1         DAK       1       1       1       1       1       1         TECPR2       1       1       1       1       1       1         TC24       1       1       1       1       1       1       1         TC24       1       1       1       1       1       1       1       1         TC80780       1       1       1       1       1       1       1 <td< td=""><td></td><td>1</td><td>1</td><td>1</td><td>1</td></td<>		1	1	1	1
IPMI       1       1       1       1       1 $POMT2$ 1       1       1       1       1 $RAB27B$ 1       1       1       1       1 $BMP6$ 1       1       1       1       1 $DAK$ 1       1       1       1       1 $DAK$ 1       1       1       1       1 $TC22$ 1       1       1       1       1 $TC24$ 1       1       1       1       1 $ITC24$ 1       1       1       1       1 $MSANTD1$ 1       1       1       1       1 $NTSDCI$ 1       1       1       1       1 $NTMEM204$ 1       1       1       1       1 $CSorf86$ 1       1       1       1       1       1 $OTUB2$ 1       1       1       1       1       1 $OTVB2$ 1       1       1       1       1       1 $OTVB2$ 1       1		1	<u>l</u>	1	<u>l</u>
POM12         1         1         1         1         1         1           RAB27B         1         1         1         1         1         1         1           BMP6         1         1         1         1         1         1         1           DAK         1         1         1         1         1         1         1           TECPR2         1         1         1         1         1         1         1           ICMT         1         1         1         1         1         1         1           MSANTD1         1         1         1         1         1         1         1         1           NSANTD1         1         1         1         1         1         1         1         1         1           NSANTD1         1         1 <t< td=""><td></td><td>1</td><td>1</td><td>1</td><td>1</td></t<>		1	1	1	1
RAB27B         1         1         1         1         1         1           BMP6         1         1         1         1         1         1         1           DAK         1         1         1         1         1         1         1           TECPR2         1         1         1         1         1         1         1           TC24         1         1         1         1         1         1         1           ICMT         1         1         1         1         1         1         1           MSANTD1         1         1         1         1         1         1         1           MSDC1         1         1         1         1         1         1         1           TMEM204         1         1         1         1         1         1         1           C8orf86         1         1         1         1         1         1         1           DTUB2         1         1         1         1         1         1         1           UCP3         1         1         1         1         1         <	POM12	1	l	1	1
BMP6         1         1         1         1         1           DAK         1         1         1         1         1         1           TECPR2         1         1         1         1         1         1           ITC24         1         1         1         1         1         1           ICMT         1         1         1         1         1         1           MSANTD1         1         1         1         1         1         1           MSANTD2         1         1         1         1         1         1           NTSDC1         1         1         1         1         1         1           Refresh         1         1         1         1         1         1           C8orf86         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1           MDGA1         1         1         1         1         1         1           SUPT7L </td <td>RAB2/B</td> <td>1</td> <td> I</td> <td>1</td> <td><u>l</u></td>	RAB2/B	1	I	1	<u>l</u>
DAK         1         1         1         1         1           TECPR2         1         1         1         1         1         1           TTC24         1         1         1         1         1         1         1           ICMT         1         1         1         1         1         1         1           MSANTD1         1         1         1         1         1         1         1           MSANTD1         1         1         1         1         1         1         1           MSANTD1         1         1         1         1         1         1         1           MSANTD2         1         1         1         1         1         1         1           NTSDC1         1         1         1         1         1         1         1           C∨/86         1         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1         1	BMP6	1	<u> </u>	1	<u> </u>
TECPR2         1         1         1         1         1           TTC24         1         1         1         1         1         1           ICMT         1         1         1         1         1         1           MSANTD1         1         1         1         0         1           NTSDC1         1         1         1         1         1           NTSDC1         1         1         1         1         1           TMEM204         1         1         1         1         1           TMEM204         1         1         1         1         1           C80786         1         1         1         1         1           TOTUB2         1         1         1         1         1           OTUB2         1         1         1         1         1           UCP3         1         1         1         1         1           SUPTL         1         1         1         1         1           SUPTL         1         1         1         1         1           ACVRIB         1         1	DAK	1	1	1	1
TTC24       1       1       1       1       1         ICMT       1       1       1       1       1       1         MSANTD1       1       1       1       1       1       1         MSANTD1       1       1       1       1       1       1       1         MSANTD2       1       1       1       1       1       1       1       1         MSANTD2       1       1       1       1       1       1       1       1         MSANTD2       1	TECPR2	1	1	1	1
ICMT       1       1       1       1       1       1         MSANTD1       1       1       1       0       1         CAPN9       1       1       1       1       1         NTSDC1       1       1       1       1       1         TMEM204       1       1       1       1       1         CSorf86       1       1       1       1       1         NPTXI       1       1       1       1       1         OTUB2       1       1       1       1       1         OTUB2       1       1       1       1       1         MDGA1       1       1       1       1       1         MDGA1       1       1       1       1       1         SUPT7L       1       1       1       1       1         SUPT7L       1       1       1       1       1         ACVRIB       1       1       1       1       1         ACVRIB       1       1       1       1       1         ARB1       1       1       1       1       1       1	TTC24	1	1	1	1
MSANTDI         1         1         0         1           CAPN9         1         1         1         1         1         1           NTSDC1         1         1         1         1         1         1         1           TMEM204         1         1         1         1         1         1         1           C8orf86         1         1         1         1         1         1         1           DYTX1         1         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1         1           UCP3         1         1         1         1         1         1         1           MDGA1         1         1         1         1         1         1         1           MDGA1         1         1         1         1         1         1         1           MDGA1         1         1         1         1         1         1         1         1	ICMT	1	1	1	1
CAPN9         1         1         1         1         1         1           NTSDC1         1         1         1         1         1         1         1           TMEM204         1         1         1         1         1         1         1           C8orf86         1         1         1         1         1         1         1           E2F3         1         1         1         1         1         1         1           NPTX1         1         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1         1           OTUB2         1         1         1         1         1         1         1           MDGA1         1         1         1         1         1         1         1           GNA15         1         1         1         1         1         1         1           SUPT7L         1         1         1         1         1         1         1           ACVR1B         1         1         1         1         1	MSANTD1	1	1	0	1
NTSDC1         1         1         1         1         1         1 $TMEM204$ 1         1         1         1         1         1         1 $C8orf86$ 1         1         1         1         1         1         1 $E2F3$ 1         1         1         1         1         1         1 $NPTX1$ 1         1         1         1         1         1         1 $OTUB2$ 1         1         1         1         1         1         1 $FAM196A$ 1         1         1         1         1         1         1 $UCP3$ 1         1         1         1         1         1         1 $MDGAI$ 1         1         1         1         1         1         1 $MDGAI$ 1         1         1         1         1         1         1 $SUPT7L         1         1         1         1         1         1         1           ACVRIB         1         1         1         1  $	CAPN9	1	1	1	1
TMEM204       1       1       1       1       1         C8orf86       1       1       1       1       1       1         E2F3       1       1       1       1       1       1         NPTX1       1       1       1       1       1       1         OTUB2       1       1       1       1       1       1         FAM196A       1       1       1       1       1       1         UCP3       1       1       1       1       1       1         MDGA1       1       1       1       1       1       1         GNA15       1       1       1       1       1       1         SUPT7L       1       1       1       1       1       1         PSAP       1       1       1       1       1       1       1       1         ACVR1B       1       1       1       1       1       1       1       1         ARBD1       1       1       1       1       1       1       1       1         BARD1       1       1       1       1	NT5DC1	1	1	1	1
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	TMEM204	1	1	1	1
E2F3       1       1       1       1       1         NPTX1       1       1       1       1       1       1         OTUB2       1       1       1       1       1       1       1         FAM196A       1       1       1       1       1       1       1       1         UCP3       1       1       1       1       1       1       1       1         MDGA1       1       1       1       1       1       1       1       1         GNA15       1       1       1       1       1       1       1       1         SUPT7L       1       1       1       1       1       1       1       1         PSAP       1       1       1       1       1       1       1       1         ACVRIB       1       1       1       1       1       1       1       1         ABCD1       1       1       1       1       1       1       1       1         BARD1       1       1       1       1       1       1       1       1         BMP6	C8orf86	1	1	1	1
NPTX1         1         1         1         1         1           OTUB2         1         1         1         1         1         1           FAM196A         1         1         1         1         1         1         1           UCP3         1         1         1         1         1         1         1           MDGA1         1         1         1         1         1         1         1           GNA15         1         1         1         1         1         1         1           SUPT7L         1         1         1         1         1         1         1           PSAP         1         1         1         1         1         1         1           ACVR1B         1         1         1         1         1         1         1           ABCD1         1         1         1         1         1         1         1           BARD1         1         1         1         1         1         1         1           BMP6         1         1         1         1         1         1         1 <t< td=""><td>E2F3</td><td>1</td><td>1</td><td>1</td><td>1</td></t<>	E2F3	1	1	1	1
OTUB2         1         1         1         1         1           FAM196A         1         1         1         1         1         1           UCP3         1         1         1         1         1         1         1           MDGA1         1         1         1         1         1         1         1           GNA15         1         1         1         1         1         1         1           SUPT7L         1         1         1         1         1         1         1           ACVR1B         1         1         1         1         1         1           ADCY5         1         1         1         1         1         1           ARRB1         1         1         1         1         1         1           BARD1         1	NPTX1	1	1	1	1
FAM196A       1       1       1       1       1         UCP3       1       1       1       1       1       1         MDGA1       1       1       1       1       1       1       1         GNA15       1       1       1       1       1       1       1       1         SUPT7L       1       1       1       1       1       1       1       1         PSAP       1       1       1       1       1       1       1       1         ACVR1B       1       1       1       1       1       1       1       1         ADCY5       1       1       1       1       1       1       1       1         ARBD1       1       1       1       1       1       1       1       1         BARD1       1       1       1       1       1       1       1       1         BICD1       1       1       1       1       1       1       1       1         BMP6       1       1       1       1       1       1       1       1       1 <t< td=""><td>OTUB2</td><td>1</td><td>1</td><td>1</td><td>1</td></t<>	OTUB2	1	1	1	1
UCP3       1       1       1       1       1         MDGA1       1       1       1       1       1       1         GNA15       1       1       1       1       1       1         SUPT7L       1       1       1       1       1       1         PSAP       1       1       1       1       1       1         ACVRIB       1       1       1       0       1         ADCY5       1       1       1       1       1         ABCD1       1       1       0       1       1         ARRB1       1       1       1       1       1         BARD1       1       1       1       1       1         BICD1       1       1       1       1       1         BMP6       1       1       1       1       1         CACNAIA       1       1       1       1       1	FAM196A	1	1	1	1
MDGA1       1       1       1       1       1         GNA15       1       1       1       1       1       1         SUPT7L       1       1       1       1       1       1         PSAP       1       1       1       1       1       1         ACVR1B       1       1       1       0       1         ADCY5       1       1       1       1       1         ABCD1       1       1       1       0       1         ARRB1       1       1       1       1       1         BARD1       1       1       1       1       1         BMCD1       1       1       1       1       1         BMR6       1       1       1       1       1         BMP6       1       1       1       1       1         CACNA1A       1       1       1       1       1         RUNX1T1       1       1       0       1       1	UCP3	1	1	1	1
GNA15       1       1       1       1       1         SUPT7L       1       1       1       1       1       1         PSAP       1       1       1       1       1       1         ACVR1B       1       1       1       0       1         ADCY5       1       1       1       1       1         ABCD1       1       1       1       0       1         ARRB1       1       1       1       1       1         BARD1       1       1       1       1       1         BDKRB2       1       1       1       1       1         BMP6       1       1       1       1       1         CACNAIA       1       1       1       1       1         RUNXITI       1       1       0       1       1	MDGA1	1	1	1	1
SUPT7L       1       1       1       1       1         PSAP       1       1       1       1       1       1         ACVR1B       1       1       1       0       1         ADCY5       1       1       1       1       1         ABCD1       1       1       1       1       1         ARB1       1       1       0       1         ATP2B3       1       1       1       1         BARD1       1       1       1       1         BDKRB2       1       1       1       1         BMP6       1       1       1       1         CACNA1A       1       1       1       1         RUNX1T1       1       1       0       1	GNA15	1	1	1	1
PSAP         1 <th1< th=""> <th1< th=""> <th1< th=""> <th1< th=""></th1<></th1<></th1<></th1<>	SUPT7L	1	1	1	1
ACVR1B       1       1       0       1         ADCY5       1       1       1       1       1         ABCD1       1       1       1       0       1         ARRB1       1       1       0       1         ATP2B3       1       1       1       1         BARD1       1       1       1       1         BDKRB2       1       1       1       1         BICD1       1       1       0       1         BMP6       1       1       1       1         CACNAIA       1       1       1       1         RUNXITI       1       1       0       1	PSAP	1	1	1	1
ADCY5       1       1       1       1       1         ABCD1       1       1       1       0       1         ARRB1       1       1       1       0       1         ARRB1       1       1       1       0       1         ARRB1       1       1       1       1       1         BARD1       1       1       1       1       1         BARD1       1       1       1       1       1         BICD1       1       1       1       1       1         BMP6       1       1       1       1       1         CACNAIA       1       1       1       1       1         RUNXITI       1       1       0       1       1	ACVR1B	1	1	0	1
ABCD1       1       1       0       1         ARRB1       1       1       0       1         ATP2B3       1       1       1       1       1         BARD1       1       1       1       1       1       1         BARD1       1       1       1       0       1         BDKRB2       1       1       1       1       1         BICD1       1       1       0       1         BMP6       1       1       1       1       1         CACNAIA       1       1       0       1         RUNXITI       1       1       0       1	ADCY5	1	1	1	1
ARRB1       1       1       0       1         ATP2B3       1       1       1       1       1         BARD1       1       1       1       0       1         BARD1       1       1       1       0       1         BDKRB2       1       1       1       1       1         BICD1       1       1       0       1         BMP6       1       1       1       1       1         CACNAIA       1       1       1       1       1         RUNXITI       1       1       0       1	ABCD1	1	1	0	1
ATP2B3       1       1       1       1         BARD1       1       1       0       1         BDKRB2       1       1       1       1       1         BICD1       1       1       1       0       1         BMP6       1       1       1       0       1         CACNAIA       1       1       1       1       1         RUNXITI       1       1       0       1	ARRB1	1	1	0	1
BARD1         1 <th1< th="">         1         <th1< th=""> <th1< th=""></th1<></th1<></th1<>	ATP2B3	1	1	1	1
BDKRB2         1 <td>BARD1</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td>	BARD1	1	1	0	1
BICD1         1         1         1         1         1           BMP6         1         1         0         1           CACNAIA         1         1         1         1           CACNAIC         1         1         0         1           RUNXITI         1         1         0         1	BDKRB2	1	1	1	1
BMP6         1         1         0         1           CACNAIA         1         1         1         1         1           CACNAIC         1         1         1         1         1         1           RUNXITI         1         1         1         0         1         1	BICD1	1	1	0	1
CACNAIA         1         1         0         1           CACNAIA         1         1         1         1         1           CACNAIC         1         1         0         1         1           RUNXITI         1         1         0         1	BMP6	1	1	0	1
CACNAIC         1         1         1         1         1           RUNXITI         1         1         0         1	CACNAIA	1	1	1	1
RUNX1T1         1         1         0         1	CACNAIC	1	1	1 0	1
	RIINX1T1	1	1	0	1

Gene	miRWalk	miRanda	RNA22	Targetscan
CCKBR	1	1	0	1
CD22	1	1	1	1
CHN1	1	1	0	1
CHRNB1	1	1	0	1
ACKR2	1	1	1	1
CSF1	1	1	1	1
CSNK1E	1	1	1	1
DRD5	1	1	0	1
DSC3	1	1	0	1
E2F3	1	1	0	1
EFNA3	1	1	0	1
CTTN	1	1	1	1
EPR411.1	1	1	1	1
F7	1	1	1	1
FINC	1	1	0	1
GNAT1	1	1	0	1
ARHGAP35	1	1	0	1
	1	1	0	1
DRMT2	1	1	1	1
	1	1	1	1
	1	1	0	1
	1	1	0	1
INPPJA VCN115	1	1	1	1
KUNJIJ KIE5A	1	1	1	<u>l</u>
KIF SA	1	1	0	1
KIR2DL4	1	1	0	<u>l</u>
IPUS	1	<u>l</u>	1	<u>l</u>
LAIKI	1	1	0	1
	1	1	1	1
SMAD4	1	1	1	<u>l</u>
MEF2C	1	1	0	l
MEF2D	1	1	0	<u>l</u>
MLLII	1	1	0	l
NR3C2	<u> </u>	<u>l</u>	0	<u> </u>
ABCCI	1	1	0	l
MUC4	1	1	0	l
MXI	1	1	0	l
MYHII	1	<u> </u>	1	1
NCAMI	1	1	1	1
NEUROD2	1	1	0	1
NFIC	1	1	0	1
NFIX	1	1	1	1
NGFR	1	1	0	1
NHS	1	1	1	1
OVOL1	1	1	1	1
P2RY2	1	1	1	1
PDE3A	1	1	1	1
PDK2	1	1	1	1
PDPK1	1	1	0	1
PECAM1	1	1	0	1
PEX10	1	1	1	1
POU2AF1	1	1	1	1
POU2F2	1	1	1	1
PPP1CB	1	1	1	1
PRLR	1	1	1	1

Gene	miRWalk	miRanda	RNA22	Targetscan
PRRG2	1	1	0	1
PSAP	1	1	0	1
PTBP1	1	1	1	1
RAB27B	1	1	0	1
RAD52	1	1	0	1
UPF1	1	1	0	1
RIT1	1	1	0	1
RNASEL	1	1	0	1
RPL22	1	1	0	1
RSU1	1	1	0	1
ATXN1	1	1	0	1
SH3BGRL	1	1	1	1
SHR	1	1	0	1
ST3GAL3	1	1	0	1
SIM1	1	1	1	1
SIC1A2	1	1	0	1
SLC6A1	1	1	1	1
SLC646	1	1	0	1
SLC6412	1	1	0	1
SLCOAT2 SLC843	1	1	0	1
SMARCAA	1	1	1	1
SMARCA4	1	1	0	1
SRMS SPD10	1	1	0	1
SKF19 SCV1	1	1	0	1
SSA1 CCV2	1	1	1	1
SSA2	1	1	1	1
SSA4	1	1	1	1
UAMD7	1	1	0	<u>l</u>
VAMP/	1	1	0	1
	1	1	1	1
	1	1	0	<u>l</u>
TFDP2 TEDC	1	1	1	<u> </u>
	1	1	0	<u>l</u>
	1	1	1	<u>l</u>
	1	1	0	1
1P/3 TDD5212	1	<u>l</u>	1	<u>l</u>
	1	1	1	1
	1	1	0	1
CLIP2	1	1	1	<u>l</u>
WHSCI	1	l	0	l
	1	1	0	1
ZNF/4	1	<u>l</u>	0	l
ZNF135	<u> </u>	l	0	l
ZNF213	1	<u>l</u>	0	<u> </u>
RAB/A	1	<u>l</u>	0	<u>l</u>
ALDH5AI	1	<u>l</u>	0	<u> </u>
CUL3	1	1	0	1
CHST1	1	1	0	1
KLF7	1	1	1	1
KCNK5	1	1	0	1
SLC4A4	1	1	1	1
VAMP4	1	1	0	1
NRP2	1	1	1	1
SYNGAP1	1	1	0	1
CACNA2D2	1	1	0	1

Gene	miRWalk	miRanda	RNA22	Targetscan
MED20	1	1	0	1
H2AFY	1	1	0	1
PREPL	1	1	1	1
ABCG1	1	1	1	1
ZNF516	1	1	1	1
USP6NL	1	1	0	1
KIAA0141	1	1	0	1
ARHGEF17	1	1	0	1
TECPR2	1	1	0	1
IOSEC1	1	1	1	1
PAN2	1	1	0	1
YAF2	1	1	1	1
ALYREF	1	1	0	1
6-Mar	1	1	0	1
CACNG2	1	1	0	1
SEC24B	1	1	1	1
ENOX2	1	1	1	1
ATG7	1	1	1	1
CELE1	1	1	1	1
NEAT5	1	1	1	1
	1	1	1	1
IKAF5IF2	1	1	1	1
CDLV2	1	1	1	1
UPLAZ WDD6	1	1	1	1
	1	1	1	1
PDZD2	1	l	0	<u>l</u>
MYIIL	1	l	1	<u>l</u>
NMNA12	1	1	1	1
SIPAILS	1	l	0	l
8-Sep	1	1	0	<u> </u>
LARP4B	1	l	1	l
ATPIIA	1	l	1	<u> </u>
CAMIAI	1	<u> </u>	0	<u> </u>
CLECI6A	1	<u> </u>	0	1
CLUH	1	<u> </u>	<u>l</u>	1
MGRNI	1	<u> </u>	0	<u>l</u>
WSCDI	1	<u> </u>	<u>l</u>	1
SIN3B	1	1	0	1
KIAA0930	1	1	1	1
SLC9A8	1	1	1	1
SMG5	1	1	0	1
ICMT	1	1	0	1
PIK3R5	1	1	1	1
TNPO3	1	1	0	1
RBFOX2	1	1	1	1
ZNF324	1	1	0	1
RAB26	1	1	0	1
CNRIP1	1	1	0	1
SAMHD1	1	1	0	1
SIN3A	1	1	1	1
C2CD2	1	1	1	1
C16orf72	1	1	0	1
FTSJ2	1	1	1	1
TNPO2	1	1	0	1
EHD2	1	1	0	1

FORP3         1         1         1         0         1           Caorlls         1         1         0         1         1         0         1           CASA7         1         1         0         1         0         1           CHST15         1         1         1         1         1         1         1           SCARA3         1         1         1         1         1         1         1           METTL13         1         1         1         1         1         1         1           GET4         1         1         1         1         1         1         1         1         1           RGFR1         1         1         1         1         1         1         1         1           RGFR1         1         1         1         1         1         1         1         1           REVR1         1         1         1         1         1         1         1         1           D2X56         1         1         1         1         1         1         1         1           NBTD1         1	Gene	miRWalk	miRanda	RNA22	Targetscan
C3or/18         1         1         0         1           SL225A37         1         1         0         1           CHST15         1         1         0         1           SCRA3         1         1         1         1         1           METTL13         1         1         1         1         1         1           METTL13         1         1         1         1         1         1         1           GEV4         1         1         1         1         1         1         1           FGFRL1         1         1         1         1         1         1         1           NEWR1B         1         1         1         1         1         1         1           DDX56         1         1         0         1         1         1         1           NBC2         1         1         0         1         1         1         1           INS60D         1         1         1         1         1         1         1           GEM188         1         1         0         1         1         1         1<	FOXP3	1	1	1	1
SLC25A37         1         1         0         1           CHST15         1         1         1         1         1           SCARA3         1         1         1         1         1         1           EVL         1         1         1         1         1         1         1           METTL13         1         1         1         1         1         1         1           GET4         1         1         1         1         1         1         1           RSF1         1         1         1         1         1         1         1           REVRL1B         1         1         1         1         1         1         1           DX56         1         1         1         1         1         1         1           NR02         1         1         1         1         1         1         1           IN080D         1         1         1         1         1         1         1           CCDC40         1         1         0         1         1         1         1           NSUN5         1	C3orf18	1	1	0	1
CHST15         1         1         1         0         1           SCARA3         1         1         1         1         1         1           METTL13         1         1         1         1         1         1           METTL13         1         1         1         1         1         1           GEF4         1         1         1         1         1         1           FGFRL1         1         1         1         1         1         1           FGRK16         1         1         1         1         1         1           NEWRL1B         1         1         1         1         1         1           DDX56         1         1         0         1         1         1           RWC2         1         1         0         1         1         1           DAS0D         1         1         1         1         1         1           GEMIN8         1         1         0         1         1         1           CCDC40         1         1         1         1         1         1           NSUN	SLC25A37	1	1	0	1
SCARA3         1         1         1         1         1         1           EVL         1         1         1         1         1         1         1           METTLI3         1         1         1         1         1         1         1           GET4         1         1         1         1         1         1         1           RSF1         1         1         1         1         1         1         1           RGFRL1         1         1         1         1         1         1         1           NEURLIB         1         1         1         1         1         1         1         1           DX56         1         1         0         1         1         1         1         1           BNC2         1         1         1         1         1         1         1           INS0DD         1         1         1         1         1         1         1           CCDC40         1         1         0         1         1         1         1           NSUN5         1         1         0         <	CHST15	1	1	0	1
EVL         1         1         1         1         1         1           METTL13         1         1         1         1         1         1         1           RSF1         1         1         1         1         1         1         1           RSF1         1         1         1         1         1         1         1           RCNK10         1         1         1         1         1         1         1           SEMRAB         1         1         1         1         1         1         1           NEURL1B         1         1         1         1         1         1         1           DDX56         1         1         0         1         1         1         1           BNC2         1         1         0         1         1         1         1           DAIRD3         1         1         0         1         1         1           DAIRD3         1         1         0         1         1           DXV55         1         1         0         1           VAC14         1         1	SCARA3	1	1	1	1
METTL13         1         1         0         1           GET4         1         1         1         1         1         1           RSF1         1         1         1         1         1         1         1           FGFRL1         1         1         1         1         1         1         1           SEMASB         1         1         1         1         1         1         1           NEURL1B         1         1         1         1         1         1         1           DX55         1         1         1         0         1         1         1         1           BNC2         1         1         1         1         1         1         1           IN080D         1         1         1         1         1         1         1           CCD240         1         1         0         1         1         1         1           DALRD3         1         1         0         1         1         1         1           INSUSS         1         1         0         1         1         1         1	EVL	1	1	1	1
GET4         1         1         1         1         1         1           RSFI         1         1         1         1         1         1         1           FGFRL1         1         1         1         1         1         1         1           KCNK10         1         1         1         1         1         1         1           NEURLIB         1         1         1         1         1         1         1           DDX56         1         1         1         1         1         1         1           TET2         1         1         1         1         1         1         1           NO80D         1         1         1         1         1         1         1           GEMIN8         1         1         0         1         1         1         1           DALRD3         1         1         0         1         1         1         1           SUNS         1         1         1         1         1         1         1           SUC2A4RG         1         1         1         1         1	METTL13	1	1	0	1
RSFI         1         1         1         1         1         1 $FGFRLI$ 1         1         1         1         1         1         1 $KCNK10$ 1         1         1         1         1         1         1 $SEMA5B$ 1         1         1         1         1         1         1 $NEURLIB$ 1         1         1         1         1         1         1 $NEWCLICA$ 1         1         1         1         1         1         1 $RNC2$ 1         1         0         1         1         1         1 $RMC1$ 1         1         1         1         1         1         1 $RMC1$ 1         1         0         1         1         1         1 $RMC1$ 1         1         1         1         1         1         1 $RMC1$ 1         1         1         1         1         1         1 $RMC1$ 1         1         1         1	GET4	1	1	1	1
FGFRLI         1	RSF1	1	1	1	1
KCNK10         1	FGFRL1	1	1	1	1
SEMASB         1 </td <td>KCNK10</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td>	KCNK10	1	1	0	1
DEURLID         1 </td <td>SEMA 5B</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	SEMA 5B	1	1	1	1
Image: Construct of the system         Image: Construct of the system <thimage: construct="" of="" system<="" th="" the=""> <thimage: co<="" td=""><td>NEURL1R</td><td>1</td><td>1</td><td>1</td><td>1</td></thimage:></thimage:>	NEURL1R	1	1	1	1
Drives         1         1         0         1           TET2         1         1         1         1         1           BNC2         1         1         1         1         1         1           BNC2         1         1         1         1         1         1         1           BND1         1         1         1         1         1         1         1           INO80D         1         1         1         0         1         1         1           GEMINS         1         1         0         1         1         1         1           DALRD3         1         1         0         1         1         1         1           ARMC1         1         1         1         1         1         1         1           NSUN5         1         1         0         1         1         1         1           SLC2A9         1         1         0         1         1         1         1           ACCDC177         1         1         0         1         1         1         1           ACAA         1	DDX56	1	1	0	1
Image: Imade: Image: Image: Imade: Image: Image: Image: Image: Image: Image:	KLHDC4	1	1	0	1
1       1       1       1       1         BNC2       1       1       1       1       1         MBTD1       1       1       1       1       1       1         INO80D       1       1       1       1       1       1         GEMIN8       1       1       0       1       1       1         CCDC40       1       1       0       1       1       0       1         DALRD3       1       1       1       0       1       1       1       1         DALRD3       1       1       1       0       1       1       1       1         ARMC1       1       1       1       1       1       1       1       1         NSUN5       1       1       1       1       1       1       1       1         SLC2A9       1       1       1       1       1       1       1       1         SLC2A4RG       1       1       1       0       1       1       1       1       1         RGMA       1       1       1       1       1       1 <t< td=""><td></td><td>1</td><td>1</td><td>1</td><td>1</td></t<>		1	1	1	1
DRC2         1         1         1         1         1         1           MBTD1         1         1         1         1         1         1         1           IN080D         1         1         1         1         1         1         1           GEMIN8         1         1         1         0         1         1         1           CCDC40         1         1         1         0         1         1         0         1           DALRD3         1         1         1         0         1         1         1         1           ARMC1         1         1         1         1         0         1         1           NSUN5         1         1         1         0         1         1         1           NSUN5         1         1         1         1         1         1         1           SLC2ARG         1         1         1         0         1         1         1           RGMA         1         1         1         0         1         1         1           NAV2         1         1         1	RNC2	1	1	1	1
INDIDI         1         1         1         1         1         1           INO80D         1         1         1         1         1         1         1           GEMIN8         1         1         1         0         1         1         1         1           DALRD3         1         1         1         0         1         1         1         1           DALRD3         1         1         1         1         0         1         1           ARMC1         1         1         1         1         1         1         1           ZNF407         1         1         1         1         0         1         1           NSUN5         1         1         1         1         1         1         1           LRRC8A         1         1         1         1         1         1         1           SLC2A4RG         1         1         1         1         1         1         1           RGMA         1         1         1         1         1         1         1           NO2         1         1         1		1	1	0	1
IN080D       1       1       1       1       1         GEMIN8       1       1       0       1         DALRD3       1       1       0       1         ARMC1       1       1       0       1         ARMC1       1       1       0       1         ARMC1       1       1       1       1         INSUN5       1       1       0       1         VAC14       1       1       1       1         IRRC8A       1       1       1       1         SLC2A9       1       1       0       1         SLC2A4RG       1       1       0       1         KCMF1       1       1       0       1         CCDC177       1       1       0       1         ANO2       1       1       1       1         NAT14       1       1       0       1         SEMA6A       1       1       1       1         IMBR1       1       1       1       1         IMPZD4       1       1       1       1         IMS2       1       1 <td>MDIDI INO80D</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	MDIDI INO80D	1	1	1	1
GERMINS         1         1         0         1           CCDC40         1         1         0         1           DALRD3         1         1         0         1           ARMCI         1         1         0         1           PPPIR9A         1         1         1         0         1           ZNF407         1         1         0         1         1           NSUN5         1         1         0         1         1           VAC14         1         1         1         1         1           SU2A9         1         1         0         1         1           SLC2A4RG         1         1         0         1         1           CCDC177         1         1         0         1         1           RGMA         1         1         1         1         1           NAT14         1         1         0         1         1           NAT14         1         1         1         1         1           NAT14         1         1         1         1         1           PDZD4         1		1	1	1	1
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	GEMINO CCDC40	1	1	0	1
DALKDS         1         1         0         1           ARMCI         1         1         0         1           PPPIR9A         1         1         1         1         1           INSUNS         1         1         1         0         1           NSUNS         1         1         1         1         1           IRRC8A         1         1         1         1         1           SLC2A9         1         1         0         1         1           SLC2A4RG         1         1         0         1         1           CCDC177         1         1         0         1         1           RGMA         1         1         0         1         1           NAT14         1         1         0         1         1           NAT14         1         1         1         1         1         1           NAT14         1         1         1         1         1         1           NAT14         1         1         1         1         1         1         1           RGMA         1         1         <		1	1	0	1
ARMC1         1         1         1         1         1         1 <i>PPPIR9A</i> 1         1         1         1         1         1         1 <i>SWP407</i> 1         1         1         0         1         1         1         1 <i>NSUN5</i> 1         1         1         1         1         1         1         1 <i>VAC14</i> 1         1         1         1         1         1         1         1 <i>SLC2A4RG</i> 1         1         0         1         1         0         1 <i>SLC2A4RG</i> 1         1         0         1         1         0         1 <i>SLC2A4RG</i> 1         1         1         0         1	DALKD3	1	l	0	1
PPPIR9A         1         1         1         1         1         1           ZNF407         1         1         0         1           NSUN5         1         1         0         1           VAC14         1         1         1         1         1           LRRC8A         1         1         1         1         1         1           SLC2A9         1         1         0         1         1         0         1           SLC2A4RG         1         1         0         1         1         0         1           KCMF1         1         1         0         1         1         0         1           RGMA         1         1         1         0         1         1         1           NO2         1         1         1         1         1         1         1           NAT14         1         1         1         1         1         1         1           ND2         1         1         1         1         1         1         1         1           ND2         1         1         1         1	ARMCI	1	I	0	<u>l</u>
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	PPP1R9A	1	<u> </u>	1	<u> </u>
NSUNS         1         1         0         1 $VAC14$ 1         1         1         1         1 $LRRC8A$ 1         1         1         1         1         1 $SLC2A9$ 1         1         0         1         1         0         1 $SLC2A4RG$ 1         1         0         1         0         1 $RCMF1$ 1         1         0         1         1         0         1 $CCDC177$ 1         1         1         0         1         1         1 $ANO2$ 1         1         1         0         1         1         1 $ANO2$ 1         1         1         0         1         1         1         1 $NAT14$ 1         1         1         1         1         1         1         1 $PDZD4$ 1         1         1         1         1         1         1 $IMBR1$ 1         1         1         1         1         1         1	ZNF407	1	1	0	1
VAC14         1         1         1         1         1         1           LRRC8A         1         1         1         1         1         1         1           SLC2A9         1         1         1         0         1         1         0         1           SLC2A4RG         1         1         1         0         1         1         0         1           KCMF1         1         1         0         1         1         0         1           RGMA         1         1         1         0         1         1         1         1           ANO2         1         1         1         1         1         1         1         1           NAT14         1	NSUN5	1	1	0	1
LRRC8A         1 </td <td>VAC14</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td>	VAC14	1	1	1	1
SLC2A9         1         1         0         1           SLC2A4RG         1         1         0         1           KCMF1         1         1         0         1           CCDC177         1         1         0         1           RGMA         1         1         0         1           ANO2         1         1         1         1           NAT14         1         0         1         1           NAT14         1         1         0         1           KIAA1161         1         1         1         1         1           PDZD4         1         1         1         1         1         1           GOLPH3         1         1         1         1         1         1           IMBR1         1         1         1         1         1         1           INF2         1         1         1         1         1         1           INF2         1         1         0         1         1         1           INF2         1         1         0         1         1         1           C	LRRC8A	1	1	1	1
SLC2A4RG         1         1         0         1           KCMF1         1         1         0         1           CCDC177         1         1         0         1           RGMA         1         1         0         1           ANO2         1         1         1         0         1           NAT14         1         1         1         1         1           SEMA6A         1         1         1         1         1           PDZD4         1         1         1         1         1           GOLPH3         1         1         1         1         1           IMF2         1         1         1         1         1           IMF2         1         1         1         1         1           IMRPS25         1         1         1         1         1           ICorf116         1	SLC2A9	1	1	0	1
KCMF1         1         1         0         1 $CCDC177$ 1         1         0         1 $RGMA$ 1         1         0         1 $RO2$ 1         1         1         0         1 $ANO2$ 1         1         1         1         1         1 $NAT14$ 1         1         1         1         1         1         1 $NAT14$ 1         1         1         1         1         1         1         1         1 $NAT14$ 1         1<	SLC2A4RG	1	1	0	1
CCDC1771101 $RGMA$ 11101 $ANO2$ 11111 $NAT14$ 11101 $NAT14$ 11101 $KIAA1161$ 11101 $SEMA6A$ 11111 $PDZD4$ 11111 $GOLPH3$ 11111 $IMBR1$ 11111 $INF2$ 11111 $INF3$ 11	KCMF1	1	1	0	1
RGMA1101 $ANO2$ 11111 $NAT14$ 11101 $NAT14$ 11101 $KIAA1161$ 11101 $SEMA6A$ 11111 $PDZD4$ 11111 $GOLPH3$ 11111 $IMBR1$ 11111 $IMF2$ 11111 $INF2$ 11	CCDC177	1	1	0	1
ANO2       1       1       1       1       1         NAT14       1       1       0       1         KIAA1161       1       1       0       1         SEMA6A       1       1       1       1       1         PDZD4       1       1       1       1       1       1         GOLPH3       1       1       1       1       1       1       1         IMBR1       1       1       1       1       1       1       1       1         HIF3A       1       1       1       1       1       1       1       1         INF2       1       1       1       1       1       1       1       1         INF2       1       1       1       1       1       1       1       1         INF2       1       1       0       1       1       1       1       1         INF2       1       1       0       1       1       1       1       1         INRPS25       1       1       1       0       1       1       1       1       1         <	RGMA	1	1	0	1
NAT14         1         1         0         1           KIAA1161         1         1         1         0         1           SEMA6A         1         1         1         1         1         1           PDZD4         1         1         1         1         1         1         1           GOLPH3         1         1         1         1         1         1         1           IMBR1         1         1         1         1         1         1         1           IMF2         1         1         1         1         1         1         1           INF2         1         1         1         1         1         1         1           INF2         1         1         1         1         1         1         1           INF2         1         1         1         0         1         1         1         1           INF2         1         1         0         1         1         1         1         1           INTEQ         1         1         0         1         1         1         1         1 <t< td=""><td>ANO2</td><td>1</td><td>1</td><td>1</td><td>1</td></t<>	ANO2	1	1	1	1
KIAA1161       1       1       1       0       1         SEMA6A       1       1       1       1       1       1         PDZD4       1       1       1       1       1       1         GOLPH3       1       1       1       1       1       1         IMBR1       1       1       1       1       1       1         HIF3A       1       1       1       1       1       1         INF2       1       1       1       1       1       1       1         OTUB2       1       1       1       1       1       1       1       1         IELOVL6       1       1       1       1       1       1       1       1         IFBX031       1       1       1       1       1	NAT14	1	1	0	1
SEMA6A         1         1         1         1         1           PDZD4         1         1         1         1         1         1           GOLPH3         1         1         1         0         1           LMBR1         1         1         1         1         1           HIF3A         1         1         1         1         1           INF2         1         1         1         1         1           MRPS25         1         1         1         1         1           FUNDC2         1         1         1         0         1           OTUB2         1         1         1         0         1           ELOVL6         1         1         1         1         1           TMEM204         1         1         1         1         1           PPP1R3B         1         1         1         1         1           GGNBP2         1         1         0         1         1           GPR63         1         1         0         1         1	KIAA1161	1	1	0	1
PDZD4       1       1       1       1         GOLPH3       1       1       1       0       1         LMBR1       1       1       1       1       1       1         HIF3A       1       1       1       1       1       1         INF2       1       1       1       1       1       1         INF2       1       1       1       1       1       1         INF2       1       1       1       1       1       1         MRPS25       1       1       1       1       1       1         FUNDC2       1       1       1       0       1       1         OTUB2       1       1       1       0       1       1       1         ELOVL6       1       1       1       1       1       1       1       1         PPP1R3B       1       1       1       1       1       1       1       1         GGNBP2       1       1       1       0       1       1       1       1         GGNBP2       1       1       1       0       1	SEMA6A	1	1	1	1
GOLPH3       1       1       0       1         LMBR1       1       1       1       1       1       1         HIF3A       1       1       1       1       1       1         INF2       1       1       1       1       1       1         INF2       1       1       1       1       1       1         INF2       1       1       1       0       1         MRPS25       1       1       1       1       1         FUNDC2       1       1       1       0       1         OTUB2       1       1       0       1       1         ELOVL6       1       1       1       0       1         TMEM204       1       1       1       1       1         FBXO31       1       1       0       1       1         GGNBP2       1       1       0       1       1         GPR63       1       1       0       1       1	PDZD4	1	1	1	1
LMBRI       1       1       1       1       1         HIF3A       1       1       1       1       1       1         INF2       1       1       1       0       1         MRPS25       1       1       1       1       1         FUNDC2       1       1       0       1         OTUB2       1       1       0       1         ELOVL6       1       1       0       1         Clorf116       1       1       1       1         PPP1R3B       1       1       1       1         FBXO31       1       1       0       1         GGNBP2       1       1       0       1         GPR63       1       1       0       1	GOLPH3	1	1	0	1
HIF3A       1       1       1       1       1         INF2       1       1       1       0       1         MRPS25       1       1       1       1       1         FUNDC2       1       1       1       0       1         OTUB2       1       1       0       1       1         ELOVL6       1       1       1       0       1         TMEM204       1       1       1       1       1         FBXO31       1       1       1       1       1         GGNBP2       1       1       0       1       1         GPR63       1       1       0       1       1         SLC38A1       1       1       0       1       1	LMBR1	1	1	1	1
INF2         1         1         0         1           MRPS25         1         1         1         1         1         1           FUNDC2         1         1         0         1         0         1           OTUB2         1         1         0         1         0         1           ELOVL6         1         1         0         1         1         0         1           Clorf116         1         1         1         0         1         1         1           PPD1R3B         1         1         1         0         1         1         1           FBX031         1         1         1         0         1         1         1         1           GGNBP2         1         1         0         1         1         0         1           GPR63         1         1         0         1         1         0         1	HIF3A	1	1	1	1
MRPS25         1 <td>INF2</td> <td>1</td> <td>1</td> <td>0</td> <td>1</td>	INF2	1	1	0	1
FUNDC2       1       1       0       1         OTUB2       1       1       0       1         ELOVL6       1       1       0       1         Clorf116       1       1       1       1       1         TMEM204       1       1       1       1       1         PPP1R3B       1       1       1       1       1         FBXO31       1       1       1       0       1         GGNBP2       1       1       0       1         GPR63       1       1       0       1         SLC38A1       1       1       0       1	MRPS25	1	1	1	1
OTUB2         1         1         0         1           ELOVL6         1         1         1         0         1           Clorf116         1         1         1         1         1           TMEM204         1         1         1         1         1           PPP1R3B         1         1         1         1         1           FBXO31         1         1         0         1           GGNBP2         1         1         0         1           CCDC68         1         1         0         1           GPR63         1         1         0         1           SLC38A1         1         1         0         1	FUNDC2	1	1	0	1
ELOVL6         1         1         0         1           Clorf116         1         1         1         1         1           TMEM204         1         1         1         0         1           PPP1R3B         1         1         1         1         1           FBXO31         1         1         1         0         1           GGNBP2         1         1         0         1         1           CCDC68         1         1         0         1         1           GPR63         1         1         0         1         1	OTUB2	1	1	0	1
Clorf116       1       1       1       1         TMEM204       1       1       1       0       1         PPP1R3B       1       1       1       1       1       1         FBX031       1       1       1       0       1         GGNBP2       1       1       0       1         CCDC68       1       1       0       1         GPR63       1       1       0       1         SLC38A1       1       1       0       1	ELOVL6	1	1	0	1
TMEM204     1     1     0     1       PPP1R3B     1     1     1     1     1       FBX031     1     1     1     1     1       GGNBP2     1     1     0     1       CCDC68     1     1     0     1       GPR63     1     1     0     1       SLC38A1     1     1     0     1	Clorf116	1	1	1	1
PPP1R3B     1     1     1       FBXO31     1     1     1       GGNBP2     1     1     0       CCDC68     1     1     0       GPR63     1     1     0	TMEM204	1	1	0	1
FBX031     1     1     1     1       GGNBP2     1     1     0     1       CCDC68     1     1     0     1       GPR63     1     1     0     1	PPP1R3R	1	1	1	1
GGNBP2     1     1     0     1       CCDC68     1     1     0     1       GPR63     1     1     0     1	FBXQ31	1	1	0	1
CCDC68         1         1         0         1           GPR63         1         1         0         1           SLC38A1         1         1         0         1	GGNBP?	1	1	0	1
GPR63     1     1     0     1       SLC38A1     1     1     0     1	CCDC68	1	1	0	1
SLC38A1         1         1         0         1	GPR63	1	1	0	1
	SI C 3841	1	1	0	1

Gene	miRWalk	miRanda	RNA22	Targetscan
SCRT1	1	1	0	1
ZMIZ2	1	1	1	1
OBSCN	1	1	1	1
DDI2	1	1	0	1
GPR123	1	1	1	1
DOT1L	1	1	0	1
МСМ8	1	1	1	1
PLXDC2	1	1	0	1
MYOCD	1	1	1	1
ZNF618	1	1	0	1
WDFY2	1	1	0	1
ERP27	1	1	0	1
ANKS3	1	1	0	1
TBC1D16	1	1	0	1
GJD3	1	1	0	1
UBE2OL1	1	1	0	1
TOMIL2	1	1	0	1
MESD4	1	1	0	1
PLEKHG4B	1	1	0	1
CLEC2L	1	1	0	1
ESCO2	1	1	0	1
TDRP	1	1	1	1
	1	1	0	1
KIAA1958	1	1	1	1
ZFPM1	1	1	0	1
AGO4	1	1	1	1
APOREC3E	1	1	0	1
SPRED2	1	1	0	1
51 KED2 7NF449	1	1	0	1
AMFR3	1	1	1	1
MPEG1	1	1	0	1
7DHHC20	1	1	0	1
MDGA1	1	1	0	1
7NF841	1	1	0	1
RNF212	1	1	0	1
SCARA5	1	1	1	1
KV KV	1	1	0	1
OR241	1	1	0	1
POIN	1	1	0	1
ΙΗΕΡΙΛ	1	1	0	1
ZNF805	1	1	0	1
SAMD12	1	1	0	1
SAMD12 SSVAD	1	1	0	1
55A4D EAM106A	1	1	1	1
ΓΑΝΠΥΟΑ		1	0	1
ASAH2D CCV2D	1	1	0	I
DNLZ		1		1
DINLL LOC100507747		1		1
LUC10050//4/			0	
LUC101928841			0	I
LOC1019294/9			0	
LOC101929847	1	1	0	1

1 "1": Yes; "0":No.